

UNITED STATES DEPARTMENT OF AGRICULTURE
RURAL ELECTRIFICATION ADMINISTRATION
WASHINGTON 25, D. C.

February 28, 1951

TELEPHONE ENGINEERING MEMORANDUM NO. 503

Subject: Methods for Construction of Telephone System Facilities

The purpose of this memorandum is to describe the methods available to REA borrowers for the construction of telephone system facilities.

METHODS AVAILABLE FOR CONSTRUCTING TELEPHONE SYSTEM FACILITIES

A. LABOR AND MATERIAL CONTRACT CONSTRUCTION.

Construction by Labor and Material Contract means that the contractor performs the construction according to terms of a contract with the owner. There are two variations of this method. They are:

1. With the contractor furnishing all labor and all materials for the project.
2. With the contractor furnishing all labor and part of the materials with the balance of the materials being furnished by the borrower. Under this method of construction the borrower has the opportunity to order the critical or long delivery items in anticipation of the construction program and still retain the advantages to be gained from labor and material contract construction. It is necessary for the borrower to order only the particular critical items and thus eliminate the ordering, storage, and accounting for the balance of the material items that would be brought about if all materials were purchased by the borrower and construction were undertaken by a labor only contract.

B. FORCE ACCOUNT CONSTRUCTION.

Under force account construction the borrower performs construction with its own employees and furnishes all materials, transportation, tools, and supplies and equipment. This method may be used for the construction of outside plant and station equipment.

Generally, it is expected that the installation of central office equipment will be made by the manufacturer of the equipment either as a subcontract to a general labor and material contract or as a separate contract when the balance of the system facilities are being installed by force account or by separate contract.

SELECTION OF CONSTRUCTION METHOD

It is the responsibility of a borrower to determine the construction method which is best suited to meet its needs. In selecting the method of construction, borrowers should weigh carefully the relative advantages and disadvantages of each method, including such factors as relative costs, adequacy, quality, and speed of construction, availability of manpower and equipment, amount of supervision required, and competency of accounting personnel. Consideration should be given to the experience that the borrower has had with these various methods of construction. While the method of construction determined by a borrower is subject to the approval of the Engineering Division, it should be pointed out that no disapprovals of a borrower's choice of method will be made without full explanation of the reasons for such action. The recommendation and advice of the borrower's engineer, if any, should be seriously considered.

The determination of the method of construction should preferably be made after the area coverage design has been prepared by the borrower's engineer and the extent of the construction to be done is known.

PLANS AND SPECIFICATIONS

Plans and specifications for the construction of all projects or systems should be prepared from data contained in an approved area coverage design developed by the borrower's engineer to provide telephone service on an area coverage basis.

DESCRIPTION OF METHODS OF CONSTRUCTION

A-1. LABOR AND MATERIAL CONTRACT CONSTRUCTION.

This method of construction provides for the contractor furnishing all labor and all materials on a unit price basis and the borrower paying the contractor for the completed facilities on the basis of an approved final inventory. Briefly, the principal steps under this method of construction are:

1. The borrower's engineer prepares the area coverage design and submits it to the borrower and REA for approval.
2. The borrower's engineer prepares final plans and specifications, based on the area coverage design referred to above, and submits them to the borrower and REA for approval.
3. Borrower sends out invitations to contractors to submit sealed bids.
4. Borrower opens bids and selects successful bidder.
5. A labor and material construction contract is executed with the successful bidder.

6. Work begins within time specified after approval by REA of the executed contract.
7. Contractor submits to borrower monthly invoice to be used as basis for payment for work completed.
8. Borrower's engineer supervises and inspects construction in process.
9. On completion of construction, the borrower's engineer submits final inventory documents and maps of completed facilities and after REA approval, final payments are made.

A-2. LABOR AND MATERIAL CONTRACT CONSTRUCTION WHERE SOME MATERIALS ARE FURNISHED BY THE BORROWER.

In those cases where a borrower has on hand an appreciable quantity of approved materials or has on order approved materials that it wishes to furnish for the construction of its telephone facilities, Supplement A (copy attached) is to be inserted in the Labor and Materials Construction Contract (REA form DS-T-10) as part of the proposal. The quantities and prices of the materials to be furnished are to be listed on the Supplement which is to be inserted between pages b4 and b5 of all copies of the bid form in DS-T10 and is to be executed along with the proposal. Additional copies of Supplement A may be obtained from the Engineering Division. The principal steps under this method of construction are identical to those listed above for labor and material contract construction except for the following:

1. Bids for construction should be invited on the basis of the contractor furnishing all labor and all materials necessary for the completion of the construction; provided, however, that the materials listed on Supplement A, to be used in constructing the project, will be furnished to the contractor by the borrower.
2. Bidders should base their unit material bids on, but not necessarily restrict their bids to, the prices quoted by the borrower for materials listed in Supplement A.
3. Materials to be furnished by the borrower should be released to the contractor at the start of construction and the contractor shall give the borrower a written receipt (Materials Receipt, REA form DS-192, copy attached) for all such materials.
4. Materials that are to be furnished by the borrower (excluding materials, other than poles, stored in the open and not within 100 feet of any building) shall, until released to the contractor, be covered by fire and either windstorm or extended coverage insurance. The insured values are not to be less than actual cash value of the property insured.
5. Subject to adjustment at the time of final settlement, the contractor on his monthly invoice shall credit the borrower, at the prices quoted in Supplement A, for all materials furnished by the borrower and installed by the contractor during the preceding month.

6. Any materials furnished by the borrower remaining as surplus at the completion of construction shall be returned to the borrower. For such materials the borrower will furnish a written receipt to the contractor.

CONSTRUCTION CONTRACT AMENDMENTS.

Construction contracts may be amended to provide for necessary changes in the original construction contemplated. All amendments require REA approval before any changes may be authorized by the borrower or the borrower's engineer.

Some borrowers may decide to amend existing construction contracts to provide additional facilities in preference to taking new bids when it appears that such action is in the best interests of the borrower. REA will require complete facts in support of the borrower's choice to add facilities under an amended contract.

OVERBUILDING.

Construction in excess of that stated in the contract is likely to result in a serious situation since it obligates more money than is available. Engineers and borrowers should not authorize the building of additional facilities without the prior approval of the Administrator.

The borrower, the engineer, and the contractor must share equally the responsibility for limiting construction to that included in a construction contract and construction contract amendments approved by the Administrator.

CONSTRUCTION CONTRACT DOCUMENTS.

1. Labor and Materials Construction Contract.

The "Telephone System Construction Contract (Labor and Materials)," (REA form DS-T-10), is to be used for constructing all outside plant facilities and may be used for the construction of all other items of plant when included in the proposal. This form of contract includes the "Notice and Instruction to Bidders," the proposal, contract form, form of bid bond, and specifications for construction, which, collectively, comprise the construction contract documents. A supply of form DS-T-10 is available from REA.

2. Equipment, Purchase, and Installation Contract.

The form of contract to be used for the purchase and installation of central office equipment, when such equipment is to be purchased and installed separately from the construction contract for outside plant, will be made available by REA. This form of contract provides for the furnishing, delivery, and installation of equipment on a lump sum bid with provisions for any alternates that may be necessary.

3. Building Construction Contract.

REA form DS-22R3 comprises the "Notice and Instruction to Bidders,"

"Proposal to Construct Buildings" and "Contractor's Bond" and shall be used by borrowers in connection with the construction by contract of central office, warehouse, or commercial office buildings, when such buildings are to be constructed separately from the construction contract for outside plant. These documents, upon execution by the borrower and the contractor and with the approval of the Administrator, becomes the Building Construction Contract.

B. FORCE ACCOUNT CONSTRUCTION.

Under this method of construction, a borrower purchases all materials, and performs the construction with its own employees. These activities include ordering, checking, accounting for, and warehousing all materials, as well as procurement of necessary trucks and other work equipment, employment of qualified construction personnel, and accounting for all expenditures. Briefly, the principal steps under this method of construction are as follows:

1. The borrower's engineer prepares the area coverage design and submits it to the borrower and REA for approval.
2. The borrower's engineer prepares final plans and specifications based upon the area coverage design referred to above including estimated unit costs and total construction cost of labor and materials and also prepares an itemized list of the materials required and submits them to the borrower and REA for approval.
3. Materials required in accordance with the approved final plans and specifications are ordered by use of Materials Contract (see section on "Purchasing of Materials for Construction") and executed contracts are submitted to REA for approval.
4. Lines are staked by the borrower's engineer in accordance with the final plans and specifications.
5. Necessary qualified personnel are obtained both for office, warehouse, and construction crews.
6. Arrangements are made to obtain all necessary trucks, tools, and other work equipment.
7. Upon submission to and approval by REA of "Certificate of Availability of Materials," construction schedule, and statement that sufficient line has been staked to allow construction according to schedule, construction may proceed.
8. Progress reports are submitted to REA and complete records kept on all materials, labor, transportation, and other costs of construction in order that all costs may be fully accounted for and entered on the borrower's accounting records.

9. On completion of construction, facilities are given final inspection and final inventory documents and maps prepared by engineer.

Detailed procedures are fully described in a Telephone Engineering Memorandum No. 504, "Construction of a Project by Force Account."

PURCHASING OF MATERIALS FOR CONSTRUCTION

A. Materials Contract.

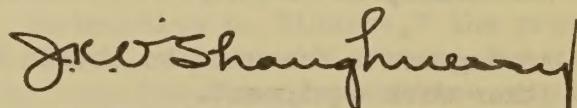
Materials Contract, REA form DS-T-1, shall be used by borrowers to purchase any type of materials for construction purposes except central office equipment.

It is recommended that a minimum of three quotations be obtained for all material and equipment purchases. In the event the borrower does not wish to ask for formal bids for the materials and equipment listed in the "List of Materials Acceptable for Use on Telephone Systems of REA Borrowers," the "Notice and Instructions to Bidders" should be detached.

Formal bids are required for all materials and equipment which do not appear in the "List of Materials Acceptable for Use on Telephone Systems of REA Borrowers."

PURCHASE OF NORMAL INVENTORY MATERIALS

Material for maintenance, operation, and minor construction such as required for subscriber connections (other than in connection with a construction project) may be procured through the use of purchase orders submitted directly to the supplier since REA approval is not required. However, the materials purchased shall be restricted to those appearing on the "List of Materials Acceptable for Use on Telephone Systems of REA Borrowers."



J. K. O'Shaughnessy,
Chief, Engineering Division

SUPPLEMENT A

The Bidder agrees that the following provisions shall be a part of the Proposal to which this Supplement is attached and shall supersede all provisions of the Proposal which are inconsistent herewith:

1. Page b5, the following Section 20 shall be added:
20. The Bidder understands and agrees that, if this Proposal is accepted, the Owner will furnish to the Bidder the materials set forth in the attached "List of Materials to be Furnished by the Owner" and the Bidder will use such materials in constructing the project and will give a receipt therefor in writing to the Owner. The Bidder, further, will on behalf of the Owner accept delivery of such of the materials set forth in the attached "List of Materials Ordered but not Delivered" as may subsequently be delivered and will promptly forward to the Owner for payment the supplier's invoice, together with the Bidder's receipt in writing for such materials. The payments to the Bidder provided for in Article III of the Construction Agreement shall be reduced by an amount equal to the value of the materials installed by the Bidder during the preceding month which have been furnished by the Owner or the delivery of which has been accepted by the Bidder on behalf of the Owner. The value of such materials for this purpose shall be computed on the basis of the unit prices stated in the attached Lists. Materials, if any, not required for the Project, which have been furnished to the Bidder by the Owner or delivery of which has been accepted by the Bidder on behalf of the Owner, shall be returned to the Owner by the Bidder upon completion of the construction of the Project.

Bidder

By _____

Date

ORIGINAL TO OWNER, 1 COPY TO CONTRACTOR, 1 COPY TO ENGINEER

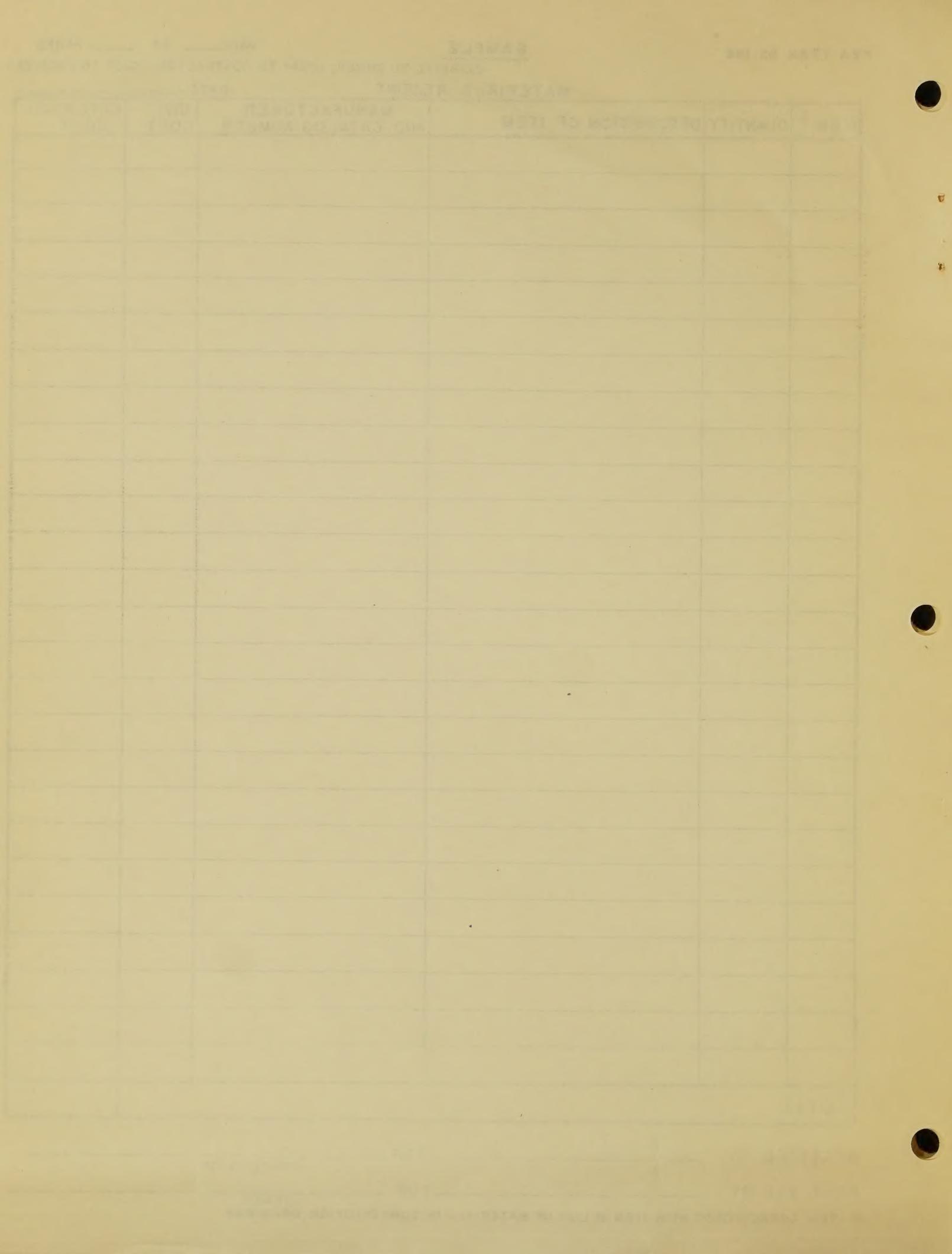
MATERIALS RECEIPT

DATE

RECEIVED BY _____ FOR _____
CONTRACTOR

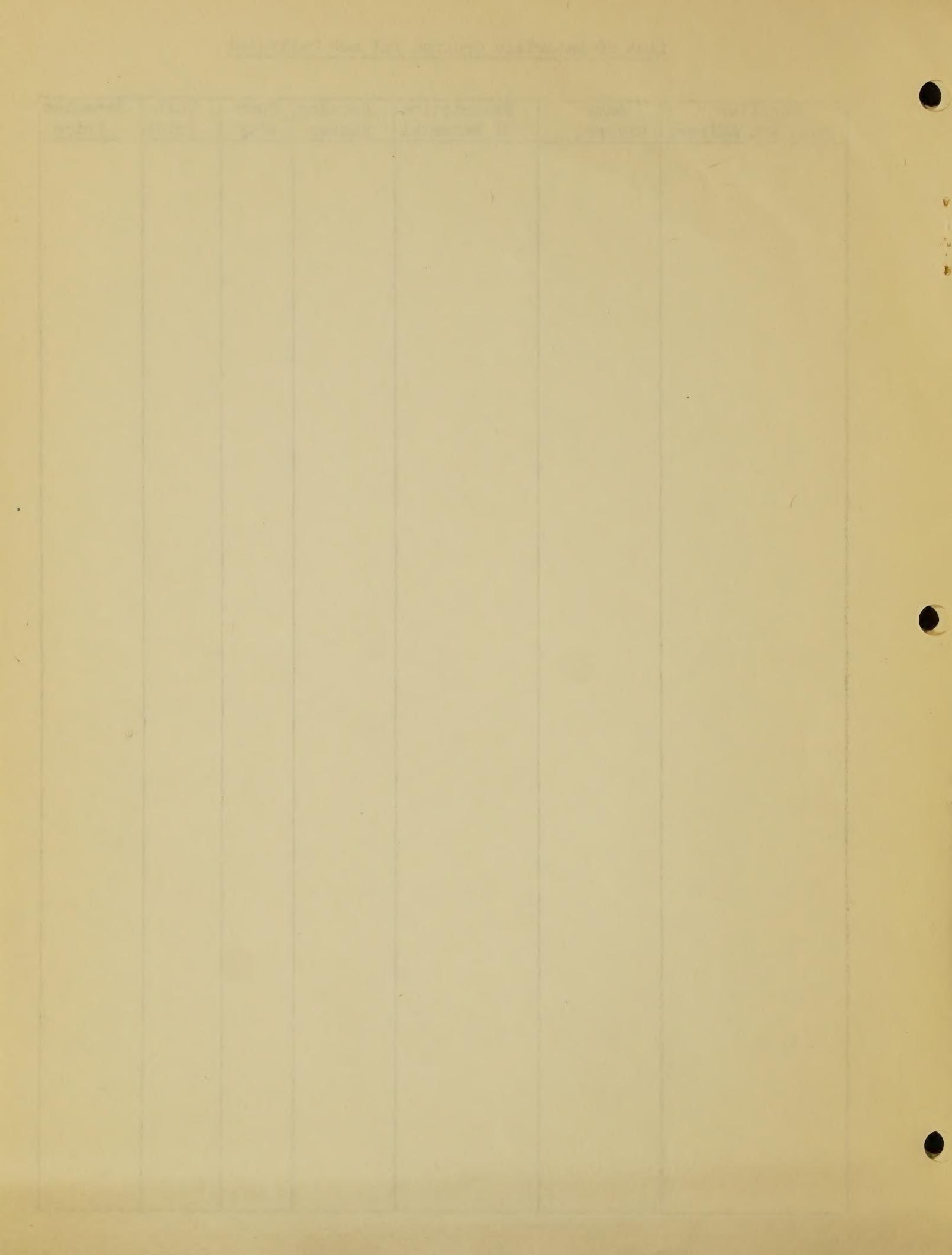
RECEIVED BY _____ FOR _____

* ITEM CORRESPONDS WITH ITEM IN LIST OF MATERIALS IN CONSTRUCTION DRAWINGS



List of Materials Ordered but not Delivered

Supplier Name and Address	Date Ordered	Description of Material	Catalog Number	Quan- tity	Unit Price	Extended Price



List of Materials to be Furnished by the Owner

Description of Material	Catalog Number	Quantity	Unit Price	Extended Price

